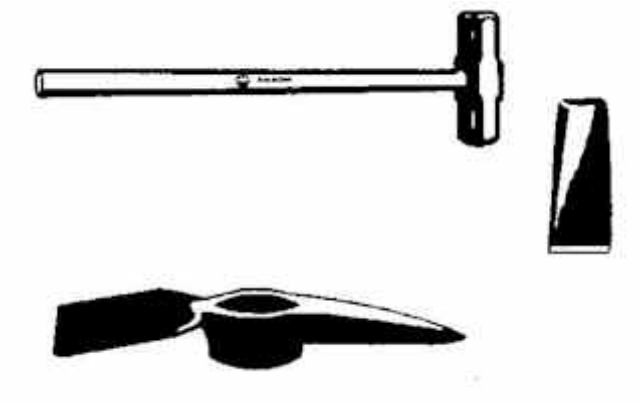
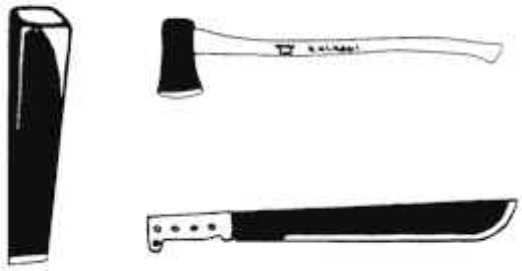
TOOLS





IMPORTANT WARNINGS

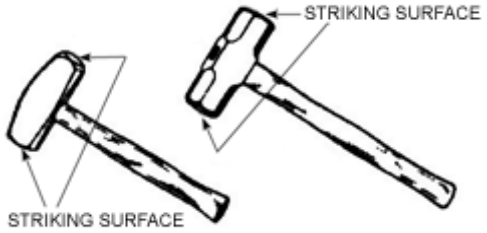
Failure to follow warnings and instructions can result in serious injury or death.

- **Always wear safety goggles when using any of the tools shown in the catalog.**
- Any striking or struck tool may lose or dislodge fragments which can travel at tremendous speeds. **Protect your and other people's eyesight:** Wear eye protection and insist that everyone in the immediate vicinity of a striking tool being used also wear safety goggles.
- Visually inspect all tools prior to each use.
- Check for cracks, mushrooming, loose or split handles, rust damage, etc.
- Never use any striking tools with a cracked or mushroomed head.
- The tool might chip or break causing possible serious injuries. Grinding or otherwise heating of the tool will affect its temper and aggravate a hazardous condition.
- Destroy, rather than discard, tools that have been judged defective.
- They might be used again by someone not aware of the hazard of the defect.
- Refer to Safety Rules for additional important information.

TOOLS

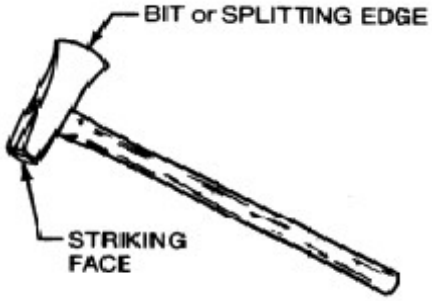
SAFETY RULES

DOUBLE FACED BLACKSMITH SLEDGES AND DRILLING HAMMERS



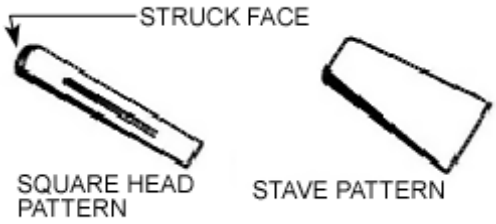
- Always wear safety goggles.
- Strike squarely - avoid glancing blows.
- Never strike with side of hammer.
- Never strike one hammer with another.
- Never use hammer with loose or damaged handle.
- Select proper hammer - use hammer of suitable size and weight for job.
- When striking chisels, punches, wedges, etc., hammer face should be larger than head of struck tool.

WOODCHOPPER MAULS



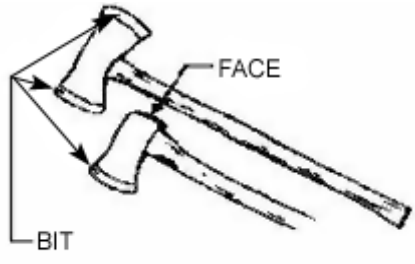
- Always wear safety goggles.
- Never drive one maul by striking with another maul, sledge or other striking tool.
- Never use this tool in striking concrete.
- Never use a maul with loose or damaged handle.
- Mauls are designed for splitting wood. Do not use mauls for any other purposes.
- Also they are used in conjunction with wood splitting wedges by first making a notch with the splitting edge and then driving the wedge with the maul's striking face.

WOOD SPLITTING WEDGES



- Always wear safety goggles.
- These wedges are designed for splitting logs, firewood, staves, and other wood products. Do not use wedges for any other purpose. Always use woodchoppers' maul or axe to make a starting notch. Wedges should be struck with a sledge or woodchoppers' maul having a larger face than the wedge.

AXES



- Always wear safety goggles.
- Never strike against metal, stone, or concrete.
- Never strike chisels, punches, rock drills or other hardened metal tools.
- Never use an axe as a wedge or a maul.
- Never strike with sides of the axe.
- Never use an axe with loose or damaged handle.
- The double bit axe is usually used to fell, trim or prune trees and to split and cut wood. It is also used for notching and shaping logs and timbers. The single bit axe, in addition to the above uses, is used to drive wood stakes with the face. Do not use axes for any other purposes.

Consult the Hand Tools Institute for additional important information.

IMPORTANT WARNINGS

READ ALL WARNINGS BEFORE USING THIS PUBLICATION

Failure to follow warnings and instructions may result in serious injury or death.

Anyone using this publication **must read and understand all warnings and other information listed below and preceding and/or adjacent to the product description. The following apply to all of the products in this price list. Warnings specific to individual products are printed at the beginning of each product section.**

All warning and safety information will be highlighted in orange.

All products are sold with the express understanding that the purchaser is thoroughly familiar with their correct application and safe use. **Use all products properly, in a safe manner and for the application for which they were intended.** Kulkoni, Inc. assumes no responsibility for the use or misapplication of any product sold by this firm. Responsibility for design and use decisions rests with the user.

REMEMBER: ANY PRODUCT WILL BREAK IF ABUSED, MISUSED, OVERUSED OR NOT MAINTAINED PROPERLY. Such breaks can cause loads to fall or swing out of control, possibly resulting in serious injury or death as well as major property damage.

Therefore:

1. Never exceed the Working Load Limit (WLL).
2. Match components properly.
3. Keep out from under a raised load.
4. Avoid shock loads.
5. Inspect products regularly.

It would be impossible in the scope of this publication to list all possible dangers and misapplications associated with the use of all products contained herein. However, in order to promote safe rigging habits, the most common hazards associated with the use of these products are outlined.

Working Load Limit

This is the term used throughout the catalog. There are, however, other terms used in the industry which are interchangeable with the term Working Load Limit. These are: WLL, SWL, Safe Working Load, Rated Load Value, Resulting Safe Working Load, and Rated Capacity.

Never exceed the Working Load Limit.

The Working Load Limit is the maximum load which should ever be applied to a product, even when the product is new and when the load is uniformly applied - straight line pull only. **Avoid side loading.** All catalog ratings are based upon usual environmental conditions, and consideration must be given to unusual conditions such as extreme high or low temperatures, chemical solutions or vapors, prolonged immersion in salt water, etc. Such conditions or high-risk applications may necessitate reducing the Working Load Limit.

Working Load Limit will not apply if product has been welded or otherwise modified.

Matching of Components

Components must match. Make certain that components such as hooks, links or shackles, etc. used with wire rope (or chain or cordage) are of suitable material size and strength to provide adequate safety protection. Attachments must be properly installed and must have a Working Load Limit at least equal to the product with which they are used. Remember: Any chain is only as strong as its weakest link.

Raised Loads

Keep out from under a raised load. Take notice of the recommendation from the National Safety Council Accident Prevention Manual concerning all lifting operations:

"All employees working at cranes or hoists or assisting in hooking or arranging a load should be instructed to **keep out from under the load**. From a safety standpoint, one factor is paramount: Conduct all lifting operations in such a manner, that if there were an equipment failure, no personnel would be injured. This means **keep out from under a raised load and keep out of the line of force of any load."**

Do not operate a load over people. Do not ride on loads.

Shock Loads

Avoid impacting, jerking or swinging of load as the Working Load Limit could be exceeded and the Working Load Limit will not apply. A shock load is generally significantly greater than the static load. **Avoid shock loads.**

Regular Inspections

Inspect products regularly for visible damage, cracks, wear, elongation, rust, etc. **Protect all products from corrosion.** The need for periodic inspections cannot be overemphasized. **No product can keep operating at its rated capacity indefinitely.** Periodic inspections help determine when to replace a product and reduce rigging hazards. **Keep inspection records** to help pinpoint problems and to ensure periodic inspection intervals.

Due to the diversity of the products involved and uses to which they can be put, it would be counterproductive to make blanket recommendations for inspection procedures and frequency. Best results will be achieved when qualified personnel base their decisions on information from rigging and engineering manuals and on experience from actual use in the field. **Refer to sources listed on page 73 for technical literature.**

Frequency of inspection will depend on environmental conditions, application, storage of product prior to use, frequency of use, etc. **When in doubt, inspect products prior to each use.** Carefully check each item for wear, deformation, cracks or elongation - a sure sign of imminent failure. Immediately withdraw such items from service.

Rust damage is another potential hazard. When in doubt about the extent of corrosion or other damage, withdraw the items from service.

Destroy, rather than discard, items that have been judged defective. They might be used again by someone not aware of the hazard involved.

Additional warnings and information on wire rope, chain, cordage, blocks and tools can be found in our General Catalog #1298. These should be read and understood thoroughly before using a particular item.

DEFINITIONS

Information contained in this catalog is subject to change; all weights and dimensions are approximate. Ratings are stated in short tons (2,000lbs.) or pounds. All dimensions are in inches; all weights are in pounds, unless stated otherwise.

Working Load Limit (WLL)

The Working Load Limit is the maximum load which should ever be applied to the product, even when the product is new and when the load is uniformly applied - straight line pull only. **Avoid side loading.** All catalog ratings are based upon usual environmental conditions and consideration must be given to unusual conditions such as extreme high or low temperatures, chemical solutions or vapors, prolonged immersion in salt water, etc. **Never** exceed the Working Load Limit.

Proof Test Load (Proof Load)

The term "Proof Test" designates a quality control test applied to the product for the sole purpose of detecting defects in material or manufacture. The Proof Test Load (usually twice the Working Load Limit) is the load which the product withstood without deformation when new and under laboratory test conditions. A constantly increasing force is applied in direct line to the product at a uniform rate of speed on a standard pull testing machine. The Proof Test Load does not mean the Working Load Limit should ever be exceeded.

Breaking Strength/Ultimate Strength

Do not use breaking strength as a criterion for service or design purposes. Refer to the Working Load Limit instead.

Breaking Strength is the average force at which the product, in the condition it would leave the factory, has been found by representative testing to break, when a constantly increasing force is applied in direct line to the product at a uniform rate of speed on a standard pull testing machine. Proof testing to twice the Working Load Limit does not apply to hand-spliced slings.
Remember: Breaking Strengths, when published, were obtained under controlled laboratory conditions. Listing of the Breaking Strength does not mean the Working Load Limit should ever be exceeded.

Design Factor (sometimes referred to as safety factor)

An industry term usually computed by dividing the catalog Breaking Strength by the catalog Working Load Limit and generally expressed as a ratio. For example: 5 to 1.

Shock Load

A load resulting from rapid change of movement, such as impacting, jerking or swinging of a static load. Sudden release of tension is another form of shock loading. Shock loads are generally significantly greater than static loads. Any shock loading must be considered when selecting the item for use in a system.
Avoid shock loads as they may exceed the Working Load Limit.

WORKING LOAD LIMITS

FURTHER EXPLANATIONS AND CAUTIONS IF LIFTING ANGLES ARE INVOLVED

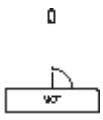
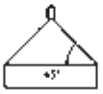
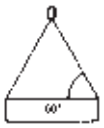
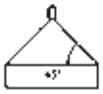
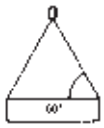
Numerical values published for Breaking Strength and Working Load Limit in the catalog are very specific in one point: They refer to straight, in-line pull or force and are obtained under laboratory conditions.

There are, however, many applications where a straight line pull is not possible or even desirable. When a tackle block system is reeved, wire rope may be bent over many sheaves; multiple leg wire rope or chain slings involve differing lifting angles; angular loads on shackles or eyebolts alter Working Load Limits of the equipment used.

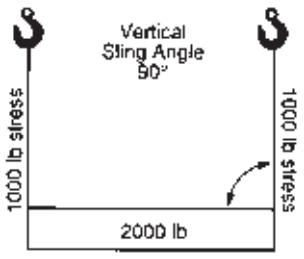
All these and other factors influencing the Working Load Limit must be taken into account when systems are designed and used.

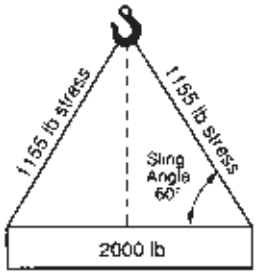
The following examples and tables are intended to highlight and demonstrate the effects of angles on the Working Load Limit.

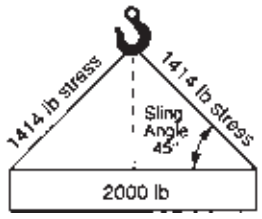
CHAIN SLINGS, Fabricated entirely from grade 80 alloy components.

WORKING LOAD LIMITS - POUNDS							
							
Chain Size							
9/32"	3,500	3,500	4,900	6,100	5,200	7,400	9,100
3/8"	7,100	7,100	10,000	12,300	10,600	15,100	18,400
1/2"	12,000	12,000	17,000	20,800	18,000	25,500	31,200
5/8"	18,100	18,100	25,600	31,300	27,100	38,400	47,000
3/4"	28,300	28,300	40,000	49,000	42,400	60,000	73,500
7/8"	34,200	34,200	48,400	59,200	51,300	72,500	88,900
1”	47,700	47,700	67,400	82,600	71,500	101,200	123,900
1.1/4”	72,300	72,300	102,200	125,200	108,400	153,400	187,800

Effect of Angles on Sling Capacities







The rated capacity of a multiple leg sling is directly affected by the angle of the sling leg with the load. As this angle decreases, the stress on each leg increases with the same load. If the sling angle is known, the capacity can be readily determined by multiplying the sling's vertical capacity by the appropriate load angle factor from the table at right.

Sling Angle	Load Angle Factor
90° (vertical)	1.000
75°	.966
60°	.866
45°	.707
30°	.500

Example:

A multiple leg sling with a rated capacity of 2000 lb. will have a reduced capacity of 1000 lb. (2000 x .500) when sling legs are at an angle of 30° with the load.